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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/523,738	10/13/2005	Shinjiro Domi	KIT-382	7696
24972	7590	03/30/2009		
FULBRIGHT & JAWORSKI, LLP				
666 FIFTH AVE				
NEW YORK, NY 10103-3198				
EXAMINER				
VETTER, ROBERT A				
ART UNIT		PAPER NUMBER		
1792				
MAIL DATE		DELIVERY MODE		
03/30/2009		PAPER		

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary

Application No.

10/523,738

Applicant(s)

DOMI ET AL.

Examiner

ROBERT VETERE

Art Unit

1792

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 04 March 2009.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-16 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-16 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 04 February 2005 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO-8508)
- Paper No(s)/Mail Date 9/05

- 4) ☐ Interview Summary (PTO-413)
- Paper No(s)/Mail Date _____
- 5) ☐ Notice of Informal Patent Application
- 6) ☐ Other: _____

DETAILED ACTION

Claim Rejections - 35 USC § 103

1. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

2. Claim 1 is rejected under 35 U.S.C. 103(a) as being unpatentable over Tanaka et al. (Ceramic Society of Japan, 10/2000, p. 280, translation provided by applicant) in light of Deki et al. (JP 09-278488, Machine Translation).

Claim 1: Tanaka teaches a method of forming ferromagnetic particles comprising the steps of: contacting particles with a solution of fluorine and iron (p. 1:23-25), forming a layer of FeOOH on the particles (2:10-12), and heating the particles to produce a ferromagnetic layer (1:26-29, 2:10-12). What Tanaka fails to teach is that a reaction initiator is added to the process. Deki, however, teaches a method of coating a substrate with hematite (¶¶ 0030) comprising the steps of providing a solution containing fluorine and iron, forming a layer of FeOOH (¶¶ 0028) and heating the coating to form hematite (¶¶ 0029-0030), wherein boric acid is added as a reaction initiator (¶¶ 0011). The selection of a known material based on its suitability for its intended use supported a prima facie obviousness determination in *Sinclair & Carroll Co. v. Interchemical Corp.*, 325 U.S. 327, 65 USPQ 297 (1945). Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to have added boric acid in the method of Tanaka with the predictable expectation of success because both Tanaka and Deki teach substantially similar methods of forming ferromagnetic layers.

3. Claims 2-3 are rejected under 35 U.S.C. 103(a) as being unpatentable over Tanaka and Deki in light of Ohtsu et al. (US 5,179,170).

Claims 2-3: Tanaka and Deki fail to teach that the reaction initiator is added successively. However, Ohtsu teaches that it is well known in the art of reaction initiators to add reaction initiators gradually to a mixture so that the initiator does not decompose in the solution (5:38-45). Thus, it would

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have been obvious to one of ordinary skill in the art at the time the invention was made to have added the boric acid gradually to the solution in the combined method of Tanaka and Deki in order to prevent the boric acid from decomposing in the solution.

4. Claims 4-16 are rejected under 35 U.S.C. 103(a) as being unpatentable over Tanaka, Deki and Ohtsu in light of Maruhotora et al. (JP 08-106902, machine translation).

Claims 4-5: With respect to the pH content of the solution, Deki teaches that the amount of acid in the solution can be adjusted (¶ 0028). "[W]here the general conditions of a claim are disclosed in the prior art, it is not inventive to discover the optimum or workable ranges by routine experimentation." *In re Aller*, 105 USPQ 233, 235 (CCPA 1955). Thus, it would have been obvious to one of ordinary skill in the art at the time the invention was made to have selected a pH range which provided the desired results.

With respect to the limitation regarding the concentration of fluorine to iron and of iron on its own, Tanaka teaches that the solution contains a saturation concentration of iron (1:23-25) and Deki does not expressly teach the ratio of iron to fluorine, but rather teaches the amount of the various ingredients (¶ 0028). Maruhotora teaches a method of forming an iron oxide layer comprising the steps of producing a FeOOH layer from a solution containing fluorine and iron in the presence of boric acid and heating the FeOOH obtained to form hematite (¶ 0012). Maruhotora also teaches that the molar ratio of FeOOH to $\text{NH}_4\text{F}\cdot\text{HF}$ is 1:5 (¶ 0012), but does not expressly teach the ratio of Iron to Fluorine. A range can be disclosed in multiple prior art references instead of in a single prior art reference depending on the specific facts of the case. *Iron Grip Barbell Co., Inc. v. USA Sports, Inc.*, 392 F.3d 1317, 1322, 73 USPQ2d 1225, 1228 (Fed. Cir. 2004). Further, "where the general conditions of a claim are disclosed in the prior art, it is not inventive to discover the optimum or workable ranges by routine experimentation." *In re Aller*, 105 USPQ 233, 235 (CCPA 1955). Thus, it would have been obvious to one of ordinary skill in the art at the time the invention was made to have selected an appropriate ratio of iron to fluorine in the combined method of Tanaka and Deki with the predictable expectation of success because the art teaches that a variety of ratios yield desirable results.

Claims 6-7 and 16: Tanaka also teaches that the iron raw material is Fe_3O_4 (1:23-25). Maruhotora also teaches that iron fluoride is used as the iron raw material (¶ 0010). The selection of a

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known material based on its suitability for its intended use supported a prima facie obviousness determination in *Sinclair & Carroll Co. v. Interchemical Corp.*, 325 U.S. 327, 65 USPQ 297 (1945). Thus, it would have been obvious to one of ordinary skill in the art at the time the invention was made to have used iron fluoride as the raw material in the combined method of Tanaka and Deki with the predictable expectation of success.

Claims 8-9: Tanaka further teaches that the iron material is dissolved in HF (1:23-25).

Maruhotora further teaches that the iron material is dissolved in a mixed solution of an ammonium fluoride and HF (¶ 0012). The selection of a known material based on its suitability for its intended use supported a prima facie obviousness determination in *Sinclair & Carroll Co. v. Interchemical Corp.*, 325 U.S. 327, 65 USPQ 297 (1945). Thus, it would have been obvious to one of ordinary skill in the art at the time the invention was made to have used a solution of HF and an ammonium fluoride in the combined method of Tanaka and Deki with the predictable expectation of success.

Claims 10-13: As discussed above, both Deki and Maruhotora teach that the reaction initiator is boric acid.

Claims 14-15: Tanaka teaches that the solution is heated under the same conditions as those listed in applicant's specification ($70\text{CO}_2 + 30\text{H}_2$, 1:26-29), but doesn't teach that gamma hematite is produced. However, because the reaction conditions are identical, it is inherent that at least some gamma hematite is produced.

5. Claims 14-15 are rejected under 35 U.S.C. 103(a) as being unpatentable over Tanaka, Deki, Ohtsu and Maruhotora in light of Matsui et al. (US 5,468,210) and Huisman et al. (US 4,349,385).

Claims 14-15: Tanaka teaches that the ferromagnetic particles are produced for use in hyperthermal cancer treatment (title), but does not expressly teach that the ferromagnetic coating is gamma hematite. However, Matsui teaches that gamma hematite is a useful substitute for magnetite in thermal treatment of tumors (1:17-37). Furthermore, Huisman teaches that FeOOH can be converted to gamma hematite by heating FeOOH under a hydrogen atmosphere (4:14-24). Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to have produced gamma hematite rather than magnetite in the method of Tanaka with the predictable expectation of

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success because it is known in the art of hyperthermal tumor treatment that gamma hematite produces results similar to magnetite.

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to ROBERT VETERE whose telephone number is (571)270-1864. The examiner can normally be reached on Mon-Fri 9-6.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Michael Cleveland can be reached on 571-272-1418. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/Robert Vetere/
Examiner, Art Unit 1792

/Michael Cleveland/
Supervisory Patent Examiner, Art Unit 1792